



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/662,913

09/15/2003

Jiann-Chen Chen

N81438/LPK

1253

1333 7590 10/21/2008

EASTMAN KODAK COMPANY
PATENT LEGAL STAFF
343 STATE STREET
ROCHESTER, NY 14650-2201

EXAMINER

LIGHTFOOT, ELENA TSOY

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

10/21/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/662,913	Applicant(s) CHEN ET AL.	
	Examiner Elena Tsoy Lightfoot	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6,8-11 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8-11,14 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Withdrawal of Finality

The finality of the rejection of the last Office action was withdrawn by the decision of the Appeal conference held on 9/12/2008. The conferees Jennifer Kolb-Michener and Tim Meeks advised the Examiner to present more clear evidence for backing up the Examiner's position.

Status of the Claims

Claims 1-3, 5-6, 8-11, and 14-18 are pending in the application. Claim 15 is withdrawn from consideration as directed to a non-elected invention.

DECLARATION

of JIANN H. CHEN & JOSEPH A. PAVLISKO UNDER 37 C.F.R. §132

It is noted that both Jiann H. Chen and Joseph A. Pavlisko, the Declarants, are inventors in the pending application, issued '084 patent filed simultaneously herewith and the references cited in the Information Disclosure Statement for the instant application. Thus, the Declarants are an inventive entity in both the pending application and the applied reference. Declarants seek to show herein, that the preamble of the Jepson format claim included in the instant application describes Declarants own work. We, the Declarants, have worked on replaceable fuser members. This work included obtaining high temperature nickel mandrels and applying primer coatings of a silane coupling agent that contains epoxies to the outer surface of the mandrel. An elastomer was then applied and cured on the outer surface of the mandrel. This elastomer was machined to a desired thickness. A topcoat layer was applied over the machined coating of the base cushion and cured. The elastomer and topcoat formed a replaceable fuser member sleeve that was removed from the mandrel. The mandrel has a coefficient of thermal expansion equal to from about 80 to about 120 percent of the coefficient of thermal expansion of the sleeve in a temperature range from about 20 to about 325°C.

In other words, the Declarants Jiann H. Chen and Joseph A. Pavlisko declare that since the preamble of the Jepson format claim of original claim 19 is Declarants' own work, the rejection has to be withdrawn.

First of all, the Examiner would like to note that the Declaration does not reflect claimed invention: claims 1 and original claim 19 recite nickel **sleeve** mounted on a mandrel (not nickel *mandrel*, as stated by the Applicants in the current Declaration). Second, the Examiner had

Art Unit: 1792

conducted a thorough search and concluded that, in contrast to Applicants statement, the preamble of the Jepson format claim of original claim 19 is not Declarants' own work.

The new Office Action based on the search is as follows:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-6, 8-11, 14 and 16-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art (AAA) and applied as evidence Shifley et al (US 6259873), Hartley et al (US 4,853,737) and Chen et al (US 5,781,840), and further in view of Wallin (US 3,799,859), Kawada et al (JP 200131864), Bird et al (US 3552898) and Weber et al (US 5,750,160).

Applicants admitted that typically, toner fuser rollers include a *hollow* cylinder core, which is often metallic, with a roller cushion layer formed about the roller. Such cushion layers are commonly made of silicone rubbers or silicone polymers having a low surface energy such as polydimethylsiloxane, which minimize adherence of toner to the roller, especially the heated roller. It is also known that cured polyfluorocarbon polymers and copolymers may be used to coat the cushion layer surface to further reduce the tendency of the toner to adhere to the roller and minimize contact of release oils with the cushion layer. (See Published Application, P10). Applicants discloses that the *improvement* comprises forming the mandrel of a metal having a

Art Unit: 1792

coefficient of thermal expansion equal to from about 80 to about 120 percent of the coefficient of thermal expansion of the sleeve in a temperature range from about 20 to about 325⁰C.

Shifley et al, Hartley et al and Chen et al are applied as evidence that all claimed limitations were known in the art except for matching coefficients of thermal expansion of the sleeve and the mandrel. **Shifley et al** is applied as evidence that **replaceable** fuser rollers comprising a *hollow* cylinder core, which is often metallic, with a roller cushion layer formed about the roller, was known in the art (See column 5, lines 16-26). Shifley et al teaches an image-recording drum 12 having a photoconductive outer surface 14 on which toner images are formed in a conventional manner (See column 5, lines 13-16). The surface 14 is part of a replaceable tube comprising, for example, an *aluminum sleeve* having an outer coating of an *organic* material (claimed replaceable fuser member) (See column 5, lines 6-19). Printing apparatus in which the outer sleeve or tube of a print drum is *readily replaceable* while the drum shaft is still physically attached to the printer frame is disclosed, for example, in U.S. Pat. No. 4,119,032 (See column 8, lines 40-48). **Hartley et al and Chen et al** are applied as evidence that claimed steps a-g (including *nickel* sleeve, applying primer, elastomer and top coatings, curing coatings and machining the cured elastomer coating) was known in the art. See Hartley et al, column 7, lines 60-66, column 10, lines 54-64 and Chen et al, column 4, lines 18-34, column 5, lines 1-3.

Wallin teaches that it is advantageous to form nickel belt (See column 9, lines 32-33) on a mandrel made of material such as aluminum, copper or stainless steel (See column 9, lines 50-53) that exhibit different temperature coefficients of expansion than nickel belt for facilitating the removal of the belt from the mandrel by **cooling** the mandrel and the belt in a cooling bath (See column 1, lines 10-24). It is noted that a *fuser* member is subjected to heating and cooling in

Art Unit: 1792

the range of 20 to about 325⁰C while operating. It is also noted that steel and nickel have coefficients of thermal expansion within claimed range (See original claim 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used aluminum, copper or nickel sleeve on a steel mandrel in the cited prior art with the expectation of facilitating the removal of the belt from the mandrel by cooling the mandrel and the belt in a cooling bath, as taught by Wallin.

The cited prior art fails to teach that a *high temperature nickel* is used for a sleeve.

Kawada et al teaches that an electrically conductive metal layer 2 layer in an electrophotographic cylindrical substrate may be formed by depositing the metal on the surface of the cylindrical substrate by electroless plating, vapor deposition or sputtering (See Abstract). It is the Examiner's position that vapor deposited a nickel layer is claimed *high temperature nickel* because it is formed at high temperature. **Bird et al** teaches that a *high temperature nickel* prepared by heat treatment of nickel at high temperature in a vacuum (See column 2, lines 14-22) meets the *stress/temperature conditions* (See column 1, lines 61-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a nickel layer by vapor deposition in the cited prior art instead of plating with the expectation of meeting the desired stress/temperature requirements, as taught by Bird et al, and since Kawada et al teaches that vapor deposition is suitable for forming an electrically conductive metal layer 2 layer on an electrophotographic cylindrical substrate.

Wallin does not teach that nickel is preferred material for making a sleeve on steel mandrel.

Weber et al teaches that nickel shell formed on aluminum alloy mandrel by nickel vapour deposition tend to warp when cooled because nickel and aluminum have different

Art Unit: 1792

coefficients of expansion and composites of nickel and aluminum. However, nickel vapour deposition on *steel* mandrels, which have essentially the same coefficient of thermal expansion, permits the deposition of a nickel shell onto a steel substrate, which is free of distortion such as warping when *heated or cooled* (See column 1, lines 37-50). It is noted that a *fuser* member is subjected to heating and cooling in the range of 20 to about 325⁰C while operating.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a mandrel of cited prior art of a material having essentially the same coefficient of thermal expansion as a nickel sleeve e.g. a steel or nickel with the expectation of preventing distortion such as warping when heated or cooled, as taught by Weber et al.

As to curing temperature of 275°C or more, Hartley et al teach that the curing treatment of the outer layer (claimed topcoat layer applied over the base cushion) is preferably carried out, at least in part, at temperatures of at least 230°C (i.e. includes claimed range of 275°C or more) (See column 8, lines 21-27).

3. Claims 1-3, 5-6, 8-11, 14 and 16-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shifley et al in view of Wallin, Kawada et al and Bird et al, further in view Weber et al, and further in view of Hartley et al and Chen et al.

Shifley et al discloses an image-recording drum 12 having a photoconductive outer surface 14 on which *toner images* are formed in a conventional manner (See column 5, lines 13-16). The surface 14 is part of a ***replaceable*** tube comprising, for example, an *aluminum* **sleeve** having an outer coating of an organic material (claimed replaceable fuser member) (See column 5, lines 6-19). Printing apparatus in which the outer sleeve or tube of a print drum is readily replaceable while the drum shaft (claimed machine mandrel) is still physically attached to the printer frame is disclosed, for example, in U.S. Pat. No. 4,119,032 (See column 8, lines 40-48).

Shifley et al fails to teach that: (i) a replaceable sleeve is made of *high temperature nickel* and mandrel is made of *steel* (Claim 1); (ii) claimed process steps a-g (Claim 1).

As to (i), Wallin, Kawada et al and Bird et al are applied here for the same reasons as above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a nickel layer by vapor deposition in the cited prior art instead of plating with the expectation of meeting the desired stress/temperature requirements, as taught by Bird et al, and since Kawada et al teaches that vapor deposition is suitable for forming an electrically conductive metal layer 2 layer on an electrophotographic cylindrical substrate.

Wallin does not teach that nickel is preferred material for making a sleeve on steel mandrel.

Weber et al is applied here for the same reasons as above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a mandrel of cited prior art of a material having essentially the same coefficient of thermal expansion as a nickel sleeve e.g. a steel or nickel with the expectation of preventing distortion such as warping when heated or cooled, as taught by Weber et al.

As to (ii), **Hartley et al and Chen et al** teach claimed steps a-g (including *nickel* sleeve, applying primer, elastomer and top coatings, curing coatings and machining the cured elastomer coating) was known in the art. See Hartley et al, column 7, lines 60-66, column 10, lines 54-64 and Chen et al, column 4, lines 18-34, column 5, lines 1-3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used teaching of Hartley et al and Chen et al for forming resin layers since Shifley et al does not limit its teaching to particular methods of applying organic layers.

Art Unit: 1792

4. Claims 1-3, 5-6, 8-11, 14 and 16-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al and Chen et al in view of Shifley et al, further in view of Wallin, Kawada et al and Bird et al, further in view Weber et al.

Hartley et al and Chen et al teach all claimed limitations except for: (i) rollers being replaceable, (ii) made of high temperature nickel mounted on mandrel with matching coefficients of thermal expansion of the sleeve and the mandrel.

As to (i), Shifley et al teaches that a fuser roller comprising a metal sleeve and organic coating may be replaceable (See column 5, lines 13-35) so the sleeve can be replaced while a drum shaft is still physically attached to the printer frame (See column 8, lines 40-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made a cylindrical nickel sleeve in Hartley et al and Chen et al replaceable with the expectation of providing the desired replacement of the sleeve while a drum shaft is still physically attached to the printer frame, as taught by Shifley et al.

As to (ii), a combination of Wallin, Kawada et al, Bird et al and Weber et al is applied here for the same reasons as above.

5. Claims 1-3, 5-6, 8-11, 14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of AAA in view of Shifley et al, Wallin, Kawada et al, Bird et al, Weber et al, Hartley et al and Chen et al, or over a combination of Shifley et al, Wallin, Kawada et al, Bird et al, Weber et al, Hartley et al and Chen et al, as applied above, and further in view of Badesha et al (US 5,141,788) for the reasons of record set forth in paragraph 8 of the Office Action mailed on 10/10/2006.

6. Claims 1-3, 5-6, 8-11, 14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of AAA in view of Shifley et al, Wallin, Kawada et al, Bird et

Art Unit: 1792

al, Weber et al, Hartley et al and Chen et al, or over a combination of Shifley et al, Wallin, Kawada et al, Bird et al, Weber et al, Hartley et al and Chen et al, as applied above, and further in view of Petropoulos et al (US 5021109) for the reasons of record set forth in paragraph 9 of the Office Action mailed on 10/10/2006.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of AAA in view of Shifley et al, Wallin, Kawada et al, Bird et al, Weber et al, Hartley et al and Chen et al, or over a combination of Shifley et al, Wallin, Kawada et al, Bird et al, Weber et al, Hartley et al and Chen et al, as applied above, and further in view of Schlueter, Jr. et al (US 5,995,796) for the reasons of record set forth in paragraph 11 of the Office Action mailed on 10/10/2006.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to show that replaceable fuser members were known in the art:

Dupree et al (US 3,927,463) (See column 1, lines 50-63, column 2, lines 17-64);

Yu et al (US 5,415,961) (See column 8, lines 9-10, 35-39);

Hollis (US 4,119,032) (See column 2, lines 15-35);

Bass et al (US 3,146,709) (See column 1, lines 10-21; column 2, lines 21-29).

Response to Arguments

9. Applicant's arguments with respect to claims 1-3, 5-6, 8-11, 14 and 16-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy Lightfoot, Ph.D.
Primary Examiner
Art Unit 1792

October 22, 2008

/Elena Tsoy Lightfoot/